

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : Attorney Docket No. 2006_1391A
Masafumi SADAHIRA et al. : **Confirmation No. 6739**
Serial No. 10/590,359 : Group Art Unit 2121
Filed May 17, 2007 : Examiner Steven R. Garland
APPARATUS CONTROL SYSTEM, : **Mail Stop: AMENDMENT**
APPARATUS, AND COMPUTER-
READABLE RECORDING MEDIUM
WHERE APPARATUS CONTROL
PROGRAM IS RECORDED

SUBMISSION OF VERIFIED TRANSLATION OF PRIORITY DOCUMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In order to perfect the claim of priority under the International Convention to Japanese Patent Application No. 2004-047275, filed February 24, 2004, a verified English translation of said Japanese Patent Application is submitted herewith.

Respectfully submitted,

Masafumi SADAHIRA et al.

/Mark D. Pratt/

By 2012.03.21 12:09:28 -04'00'

Mark D. Pratt

Registration No. 45,794

Attorney for Applicants

MDP/lkd
Washington, D.C. 20005-1503
Telephone (202) 721-8200
Facsimile (202) 721-8250
March 21, 2012


CERTIFICATION

I, Mayumi SUGIURA, whose address is Osaka Nakanoshima Building 2F., 2-2, Nakanoshima 2-chome, Kita-ku, Osaka-shi, Osaka, Japan, hereby certify that I am the translator of the attached document, namely,

Japanese Patent Application No. 2004-047275

that I am familiar with both the Japanese language and the English language, and that the translation is a true and correct translation from the Japanese language to the English language to the best of my knowledge and belief.

This 14th day of February, 2012



Mayumi SUGIURA

【Kind of Document】	Petition
【Reference Number】	2399950177
【Filing Date】	February 24, 2004
【Receiver】	Director General of the Patent Office
【IPC】	F24D 3/00
【Inventor】	
【Address or Residence】	c/o Matsushita Electric Industrial Co., Ltd. 1006, Oaza Kadoma, Kadoma-shi Osaka, Japan
【Name】	Masafumi SADAHIRA
【Inventor】	
【Address or Residence】	c/o Matsushita Electric Industrial Co., Ltd. 1006, Oaza Kadoma, Kadoma-shi Osaka, Japan
【Name】	Atusi NAKAYAMA
【Inventor】	
【Address or Residence】	c/o Matsushita Electric Industrial Co., Ltd. 1006, Oaza Kadoma, Kadoma-shi Osaka, Japan
【Name】	Yoshiaki WATANABE
【Inventor】	
【Address or Residence】	c/o Matsushita Electric Industrial Co., Ltd. 1006, Oaza Kadoma, Kadoma-shi Osaka, Japan
【Name】	Takaaki OKUDE
【Inventor】	
【Address or Residence】	c/o Matsushita Electric Industrial Co., Ltd. 1006, Oaza Kadoma, Kadoma-shi Osaka, Japan
【Name】	Yasuo YOSHIMURA
【Applicant】	
【Identification No.】	000005821
【Name or Title】	Matsushita Electric Industrial Co., Ltd.
【Agent】	
【Identification No.】	100097445
【Patent Attorney】	
【Name or Title】	Fumio IWAHASHI
【Selected Agent】	
【Identification No.】	100103355
【Patent Attorney】	
【Name or Title】	Tomoyasu SAKAGUCHI
【Selected Agent】	
【Identification No.】	100109667
【Patent Attorney】	
【Name or Title】	Hiroki NAITO
【Office Fee】	

【Record No.】	011305
【Amount】	¥21,000
【Appendix】	
【Item】	Claims 1
【Item】	Specification 1
【Item】	Drawings 1
【Item】	Abstract 1
【No. of General Letters of Attorney】	9809938

[Kind of Document]

Claims

[Claim 1]

A remote control system provided with a water heater for supplying heated water to an apparatus, and a remote controller of the water heater to be connected to one or more servers, comprising:

an apparatus setting means for performing a setting on a connection between the apparatus, the water heater and the remote controller and/or a test run;

a network setting means for performing a setting on a connection between the remote controller and the server;

a setting status monitoring means for monitoring whether both of the settings of the apparatus setting means and the network setting means have been completed;

a setting status display means for displaying a setting status based on information of the setting status monitoring means; and

a setting status information transmitting means for transmitting to the server a setting status by the apparatus setting means based on information of the setting status monitoring means.

[Claim 2]

The remote control system according to claim 1, further comprising:

an initial startup status display means for displaying setting status information based on information of the setting status monitoring means at a time when a power of the remote controller is turned on.

[Claim 3]

A program which causes a computer to execute at least a part of functions of the remote control system defined in any one of claims 1 through 2.

[Claim 4]

A remote control system including a remote controller of an apparatus requiring an installation work, and to be connected to one or more servers, comprising:

an apparatus setting means for performing a setting on a connection between the apparatus and the remote controller and/or a test run;

a network setting means for performing a setting on a connection between the remote controller and the server;

a setting status monitoring means for monitoring whether both of the settings of the apparatus setting means and the network setting means have been completed;

a setting status display means for displaying a setting status based on information of the setting status monitoring means; and

a setting completion information transmitting means for transmitting to the server a setting status by the apparatus setting means based on information of the setting status monitoring means.

[Kind of Document] Specification
[Title of the Invention] Remote Control System and Program therefor
[Technical Field]
[0001]

The present invention relates to a remote control system provided with a function of connecting, via a network, a water heater (apparatus) such as an electric-power-controlled gas-fired water heater, an oil-fired water heater, an electric water heater, or a heat pump water heater, to a server, as well as a program for the system.

[Background Art]
[0002]

An example (e.g. see patent literature 1) of a conventional remote control system is described referring to FIG. 8. In FIG. 8, the reference sign 801 denotes an apparatus, 802 a water heater, 803 a remote controller, 804 a server, and 805 a telephone line network. The remote controller 803 communicates with the apparatus 801 or the water heater 802 to control operations of the apparatus 801 and the water heater 802. Also, the server 804 communicates with the remote controller 803 via the telephone line network 805 to control the remote controller 803 or to acquire a status of the water heater 802 under the control of the remote controller 803.

[Patent Literature 1] Japanese Unexamined Patent Publication No. 2002-176681
[Disclosure of the Invention]
[Problems to be Solved by the Invention]

[0003]

The conventional remote control system has the following drawbacks, which are not recited in the publication. Specifically, the water heater is connected to a bath and various hot water taps or faucets. The plumbing layout differs depending on a layout of a house where the water heater is installed. Accordingly, installation of a water heater involves a work concerning thereto. Also, an apartment building equipped with an internet accessibility has been recently spread. In such an apartment building, a work of installing network-related devices such as a hub or a router for use in physically connecting the remote controller to a server, is required.

[0004]

Whether or not the work relating to the installation of the water heater or the work relating to the network connection is ended first is unknown. Accordingly, it is extremely difficult to fix the order of the settings. After the work relating to the installation of the water heater and the work relating to the network connection are ended, an operation relating to network setting and an operation relating to apparatus setting are necessary to use the apparatus installed by these works by a remote control system.

[0005]

For instance, the network setting includes selection of an IP address assignment method, subnet mask setting, DNS setting, and access point URL list setting. The apparatus setting includes: confirmation as to whether the apparatus connected to the remote controller is normally operated; confirmation as to whether a command displayed on a screen of the remote controller corresponds to the actual operation of the apparatus; confirmation as to whether the apparatus is operated in accordance with the command; and adjustment.

[0006]

As mentioned above, the network setting and the water heater setting are different in expertise for work and/or setting, which may likely to involve respective setting operations by different workers or operators. In view of this, there is a demand for a function of letting the operators easily recognize an ongoing setting status, as well as a function of allowing the operators to perform the setting operations independently, and a function of notifying the server of completion of the respective setting operations upon the completion.

[0007]

In the conventional art, the server has been notified merely of completion of the network-connection related work and the network setting. There has been no way of confirming whether the water heater installation work and the water heater setting have been completed. In a worse case, the operator may overlook that the water heater installation work and/or the water heater setting has been undone or has not been completed.

[0008]

In view of the problems residing in the prior art, it is an object of the invention to provide a remote control system having a function that enables different operators to perform an apparatus setting and a network setting independently and efficiently and to easily confirm setting statuses on the apparatus setting and the network setting.

[Means for Solving the Problems]

[0009]

In order to solve the problems residing in the prior art, a remote control system and a program of the invention having a function of causing the setting status information monitoring means to monitor the setting statuses of the apparatus setting means and the network setting means, upon completion of both of the settings, operating the setting status information transmitting means to transmit to the server the information that the setting statuses have been completed, and displaying a current setting by the setting status display means based on the information acquired by the setting status monitoring means, whereby the remote control system enables different setting operators to perform setting operations independently and efficiently by displaying

whether the settings to be performed by the different setting operators have been completed.

[0010]

Further, the remote control system of the invention is configured as a remote control system that enables the setting operators to easily perform an operation and at the same time to easily confirm setting statuses by causing the initial startup status display means to display setting information representing that the apparatus is in an unset state at the time when the power is turned on.

[Advantages of the Invention]

[0011]

The remote control system and the program of the invention enable different setting operators to perform setting operations independently and efficiently by displaying whether the setting to be performed by the setting operators has been completed.

[Best Mode for Carrying out the Invention]

[0012]

A first invention is directed to a remote control system provided with a water heater for supplying heated water to an apparatus, and a remote controller of the water heater to be connected to one or more servers. The remote control system includes an apparatus setting means for performing a setting on a connection between the apparatus, the water heater and the remote controller and/or a test run; a network setting means for performing a setting on a connection between the remote controller and the server; a setting status monitoring means for monitoring whether both of the settings of the apparatus setting means and the network setting means have been completed; a setting status display means for displaying a setting status based on information of the setting status monitoring means; and a setting status information transmitting means for transmitting to the server a setting status by the apparatus setting means based on information of the setting status monitoring means. With the above configuration, there is provided a remote control system having a function of causing the setting status transmitting means to monitor the setting statuses of the apparatus setting means and the network setting means, upon completion of both of the settings, operate to transmit to the server the information that the setting statuses have been completed, and displaying a current setting by the setting status display means based on the information acquired by the setting status monitoring means, whereby the remote control system enables different setting operators to perform setting operations independently and efficiently by displaying whether the settings to be performed by the different setting operators have been completed.

[0013]

A second invention is directed to a remote control system further including an initial startup status display means for displaying setting status information based on information of the setting status monitoring

means at a time when a power of the remote controller is turned on. With this configuration, there is provided a remote control system that enables the setting operators to easily perform an operation and at the same time to easily confirm setting statuses by causing the initial startup status display means to display setting information representing that the apparatus is in an unset state at the time when the power is turned on.

[0014]

A third invention is directed to a program which causes a computer to execute at least a part of functions of the remote control system defined in any one of the first and second inventions. The program causes various hard resources such as an electric/information apparatus, a computer, and a server to cooperate with each other to thereby easily implement at least a part of the remote control system of the invention. Use of the program facilitates distribution/update of the program and an installation operation thereof by recording the program in a recording medium, or by delivering the program using a communications line.

[0015]

A fourth invention is directed to a remote control system including a remote controller of an apparatus requiring an installation work, and to be connected to one or more servers. The remote control system includes an apparatus setting means for performing a setting on a connection between the apparatus and the remote controller and/or a test run; a network setting means for performing a setting on a connection between the remote controller and the server; a setting status monitoring means for monitoring whether both of the settings of the apparatus setting means and the network setting means have been completed; a setting status display means for displaying a setting status based on information of the setting status monitoring means; and a setting completion information transmitting means for transmitting to the server a setting status by the apparatus setting means based on information of the setting status monitoring means. With this configuration, there is provided a remote control system having a function of causing the setting status information transmitting means to monitor the setting statuses of the apparatus setting means and the network setting means, upon completion of both of the settings, operate to transmit to the server the setting statuses, and displaying a current setting by the setting status display means based on the information acquired by the setting status monitoring means, whereby the remote control system enables different setting operators to perform setting operations independently and efficiently by displaying whether the settings to be performed by the different setting operators have been completed.

[0016]

In the following, embodiments of the invention will be described referring to the drawings. It should be understood that the invention is not limited to the embodiments.

[0017]

(First Embodiment)

FIG. 1 is a block diagram showing a remote control system in a first embodiment of the invention. Referring to FIG. 1, the reference sign 101 denotes an apparatus, 102 a water heater, 103 a remote controller, 104 a server, 105 a remote controller communicating means, 106 a server communicating means, 107 an apparatus inter-apparatus communicating means, 108 a water heater inter-apparatus communicating means, 109 a remote controller inter-apparatus communicating means, 110 an apparatus setting means, 111 a network setting means, 112 a setting status information transmitting means, 113 a remote controller controlling means, 114 a display means, 115 a setting status monitoring means, and 116 a setting status display means.

[0018]

The configuration of the embodiment can be easily implemented by using a bath as the apparatus 101, a gas-fired appliance as the water heater 102, a work station as the server 104, a LAN card capable of TCP/IP communication via the Internet or a like device as the remote controller communicating means 105 and the server communicating means 106, a serial communication means as the apparatus inter-apparatus communicating means 107, the water heater inter-apparatus communicating means 108, and the remote controller inter-apparatus communicating means 109, a microcomputer as the apparatus setting means 110, the network setting means 111, the setting status information transmitting means 112, the remote controller controlling means 113, the setting status monitoring means 115, and the setting status display means 116, and a touch panel capable of displaying and operation acceptance for the user, as the display means 114.

[0019]

As the apparatus 101, a hot-water floor heating device for heating a floor, or a bathroom dryer, using heated water generated in the hot water faucets or the water heater 102 may be used, in addition to the bath. Examples of the water heater 102 are an electric-power-controlled gas-fired water heater, an oil-fired water heater, an electric water heater, and a heat pump water heater.

[0020]

In the following, an operation and a process of the remote control system having the above configuration will be described.

[0021]

First, the server 104 is activated to start an operation of the remote control system. After the remote controller 103 is installed, and an operation of the remote controller 103 is started, the remote controller controlling means 113 controls the display means 114 to display an operation panel of the apparatus 101, and interface buttons for allowing apparatus connection

and network setting based on a program stored in the remote controller controlling means 113. When the user depresses an intended button displayed on the display means 114, the remote controller controlling means 113 causes to start an operation assigned to the relevant button.

[0022]

For activation of the remote control system, the apparatus setting and the network setting are required. FIG. 2 is a diagram showing a setting screen in the embodiment. Referring to FIG. 2, the reference sign 201 denotes a display setting button, 202 a test run button 202, 203 a line connection button, 204 a server connection button, and 205 an end button. The display setting button 201 and the test run button 202 are buttons relating to the apparatus setting, and the line connection button 203 and the server connection button 204 are buttons relating to the network setting. Upon completion of the operations designated by the respective buttons, setting status information is stored in the setting status monitoring means 115.

[0023]

When the user depresses the display setting button 201, the remote controller controlling means 113 performs interface setting to display information on the remote controller 103, using the apparatus setting means 110. When the user depresses the test run button 202, the remote controller controlling means 113 controls the apparatus 101 after the interface setting to perform a test run, using the apparatus setting means 110 and the remote controller inter-apparatus communicating means 109. When the user depresses the line connection button 203, the remote controller controlling means 113 performs a setting as to whether the IP address is assigned by a fixed IP or a dynamic host configuration protocol (DHCP), subnet mask setting, domain name system (DNS) setting, and gateway setting, using the network setting means 111. When the user depresses the server connection button 204, the remote controller controlling means 113 controls the setting information monitoring means 115 to confirm that a necessary setting has been completed, using the setting status information transmitting means 112. Thereafter, the remote controller controlling means 113 allows connection to the server 104 via the remote controller communicating means 105 and the server communicating means 106. At this stage, the network address of the remote controller 103 and information relating to the connected apparatus are uploaded to the server 104, and information relating to an operation of the apparatus is downloaded from the server 104. Failure diagnosis of the apparatus, remote controllability of the apparatus, and information provision to the user via the remote controller 103 are performed based on the information communicated between the remote controller 103 and the server 104. When the user depresses the end button 205, the setting screen is terminated.

[0024]

FIG. 3 is a flowchart showing a setting operation in the embodiment. FIG. 3 shows an operation in the case where a setting screen is displayed on the display means 14 under the control of the remote controller controlling means 113. In the following, the operation is described referring to the flowchart, when needed.

[0025]

In the case where an operator who sets network connection performs setting before all the connection works of the apparatus 101, the water heater 102 and the remote controller 103 are completed, the operator who sets network connection is allowed to perform network setting prior to the connection work by depressing the line connection button 203 (STEP 15) and depressing the server connection button 204 (STEP 16).

[0026]

In the case where there is an unset item settable by the network setting operator, the setting status monitoring means 115 causes the setting status display means 116 to display the message "LINE CONNECTION IS INCOMPLETE" (STEP 19), and prompts the operator to perform a setting operation.

[0027]

In the case where the unset item is related to apparatus setting, as shown in FIG. 4, the setting status display means 116 causes to display the message "APPARATUS SETTING IS INCOMPLETE, AND WILL BE AUTOMATICALLY REGISTERED LATER" (STEP 22). Here, by displaying the message "WILL BE AUTOMATICALLY REGISTERED LATER", completion of network setting is notified to the network setting operator.

[0028]

At this stage, the setting status monitoring means 115 stores information representing that the apparatus setting has been completed. Later, when the apparatus setting operator completes all the apparatus settings, the setting status monitoring means 115 outputs information relating to all the setting statuses to the setting status information transmitting means 112. Then, the setting status information transmitting means 112 automatically executes a server connection processing (STEP 6, STEP S21).

[0029]

In the case where an apparatus setting operator performs an operation first, connection work between the apparatus 101, the water heater 102 and the remote controller 103 is performed. The apparatus setting can be performed prior to network setting by depressing the display setting button (STEP 1) and depressing the test run button (STEP 8).

[0030]

In the case where there is an unset item settable by the apparatus setting operator, the

setting status monitoring means 115 causes the setting status display means 116 to display the message “TEST RUN IS INCOMPLETE” (STEP 4) or the message “DISPLAY SETTING IS INCOMPLETE” (STEP 11), and prompts the operator to perform a setting operation.

[0031]

In the case where the unset item is related to network setting, the setting status display means 116 causes to display “NETWORK SETTING IS INCOMPLETE, AND WILL BE AUTOMATICALLY REGISTERED LATER” (STEP 7, 14). Here, by displaying the message “WILL BE AUTOMATICALLY REGISTERED LATER”, completion of apparatus setting is notified to the apparatus setting operator.

[0032]

At this stage, the setting status monitoring means 115 stores information representing that the apparatus setting has been completed. Later, when the network setting operator completes all the network settings, the setting status monitoring means 115 outputs information relating to all the setting statuses to the setting status information transmitting means 112. Then, the setting status information transmitting means 112 automatically executes a server connection processing (STEP 21).

[0033]

It should be noted that it is impossible to connect to the server 104, regardless that the network setting has been completed by depressing the line connection button 203, if connection between the remote controller communicating means 105 and the server communicating means 106 is not established. Accordingly, upon receiving the information relating to all the setting statuses from the setting status monitoring means 115, the setting status information transmitting means 112 periodically repeats the connection to the server 104 (e.g. every 30 minutes) until the connection to the server 104 is completed, whereby the connection between the server 104 and the remote controller 103 is securely completed.

[0034]

Also, the remote controller controlling means 113 has a function of permitting, via the display means 114, a user to operate the apparatus 101 or the water heater 102 upon completion of the setting by the apparatus setting means 110 even before the setting by the network setting means 111 has not been completed. With use of this function, the user is allowed to utilize the functions of the apparatus 101 and the water heater 102 even if the remote controller 103 is disconnected from the network due to some reason, and the network-related function of the remote control system is made unusable.

[0035]

As mentioned above, there is provided a remote control system having a function of

causing the setting status information transmitting means 112 to monitor the setting statuses of the apparatus setting means 110 and the network setting means 111, upon completion of both of the settings, operate to transmit to the server the information that the setting statuses have been completed, and displaying a current setting by the setting status display means 116 based on the information acquired by the setting status monitoring means 115, whereby the remote control system enables different setting operators to perform setting operations independently and efficiently by displaying whether the settings to be performed by the different setting operators have been completed.

[0036]

The display means of the remote controller may display that the setting status has been sent to the server upon completion of both of the settings. Also, the server may request the remote controlling system of the water heater for a setting status if the server fails to receive a signal indicating a setting status within a predetermined duration. Particularly, if the server is connected to a number of water heater remote control systems, and fails to receive a signal indicating a setting status from some of the water heater remote control systems while succeeded in receiving a setting status signal from most of the water heater remote control systems, the server may send an alert signal to the some of the water heater remote control systems, or to another display means to prompt the user, the setting operator, or a related staff for confirmation. For instance, in the case where setting incompleteness has been found in one of the houses in a housing complex or an apartment building, it is highly likely that the setting operation has been left undone or incomplete. In such a case, the user, the setting operator, or the related staff is prompted for confirmation. Alternatively, the current status may be sent to the server at the time when the remote controller 103 is communicatively connected to the server, in addition to transmission of the information that the settings have been completed to the server at the time when both of the settings have been completed. Further alternatively, the current status may be sent to the server at the time when one of the settings has been completed.

[0037]

This embodiment describes the case that the display means 114 is a touch panel where information is displayed, and user's operation acceptance is enabled. Alternatively, user's operation acceptance may be performed by other means.

[0038]

The various means described in the embodiment may be implemented in the form of a program that causes various hard resources such as an electric/information apparatus, a computer, and a server equipped with a CPU (or a microcomputer), a RAM, a ROM, a storing/recording device, and an input/output device to cooperate with each other. Use of the program facilitates

distribution/update of the program and an installation operation thereof by recording the program in a recording medium such as a magnetic medium or an optical medium, or by delivering the program using a communications line such as the Internet.

[0039]

(Second Embodiment)

FIG. 5 is a block diagram showing a remote control system in the second embodiment of the invention. Referring to FIG. 5, the reference sign 501 denotes an initial startup status display means. This configuration can be easily implemented by using a microcomputer or a like element as the initial startup status display means 501.

[0040]

An operation and a process of the remote control system having the above configuration are described in the following.

[0041]

First, the server 104 is activated to start an operation of the remote control system. After the remote controller 103 is installed, and an operation of the remote controller 103 is started, the remote controller controlling means 113 controls the display means 114 to display an operation panel of the apparatus 101, and interface buttons for allowing apparatus connection and network setting based on a program stored in the remote controller controlling means 113. When the user depresses an intended button displayed on the display means 114, the remote controller controlling means 113 causes to start an operation assigned to the relevant section.

[0042]

Immediately after a power is supplied to the remote controller 103 to start the operation of the remote controller 103, the remote controller controlling means 113 issues a command to the setting status monitoring means 115 so as to control the initial startup status display means 501 to output a setting status of the remote controller 103 at an initial startup time of the remote controller 103, which is changed from a power-off state to a power-on state.

[0043]

FIG. 6 is a flowchart showing an operation of displaying a setting screen at the initial startup time. An operation of the initial startup status display means 501 is described referring to FIG. 6. At the initial startup time, the initial startup status display means 501 causes the display means 104 to display an initial startup status setting screen as shown in FIG. 7, in the case where there is an unset item, based on the information acquired by the setting status monitoring means 115 (STEP 61).

[0044]

In the case where e.g. display setting has been completed, the initial startup status

display means 501 causes to display an image (display setting button 701) indicating that depressing the display setting button is disabled, or causes to display a setting completion mark 706. By performing the above operation, the setting operator is allowed to easily judge which setting has been completed. The setting completion mark is updated each time the setting button is depressed (STEP 63), and the relevant setting is executed (STEP 64) (STEP 62). These operations are cyclically executed until the end button 705 has been depressed.

[0045]

In the case where the power is turned on again to execute an initial startup operation in a state that all the settings have been completed, the initial startup status setting screen (see FIG. 7) is not displayed since there is no unset item (STEP 61). By performing the above operation, the setting operators are allowed to judge that all the operations have been completed merely by turning on the power again.

[0046]

As mentioned above, controlling the initial startup status display means 501 to display setting status information indicating that a certain setting operation has been incomplete at the time when the power is turned on enables the setting operator to easily perform the setting operations and easily confirm the setting statuses.

[0047]

Alternatively, setting status information indicating that a certain setting operation is incomplete may be displayed when the display means is turned on at a time other than the time when the power is turned on, or may be displayed every predetermined time interval (e.g. at 5 minutes interval). Further alternatively, the setting status information indicating that a certain setting operation is incomplete may be sent to the server at the aforementioned timings.

[0048]

This embodiment describes the case that the apparatus is the water heater. Alternatively, the apparatus equipped with the remote controller may be a remote control system connectable to the server, such as facility equipment, or household electric appliances other than the water heater.

[0049]

The various means described in the embodiment may be implemented in the form of a program that causes various hard resources such as an electric/information apparatus, a computer, and a server equipped with a CPU (or a microcomputer), a RAM, a ROM, a storing/recording device, and an input/output device to cooperate with each other. Use of the program facilitates distribution/update of the program and an installation operation thereof by recording the program in a recording medium such as a magnetic medium or an optical medium, or by delivering the

program using a communications line such as the Internet.

[0050]

The diagrams concerning the screen images described in the embodiment are merely examples of the screen image, and not limited thereto.

[Industrial Applicability]

[0051]

As described above, the remote control system and the program of the invention have a function of causing the setting status monitoring means to monitor the setting statuses of the apparatus setting means and the network setting means, upon completion of both of the settings, operate the setting status information transmitting means to transmit to the server the setting statuses, and displaying a current setting by the setting status display means based on the information acquired by the setting status monitoring means, whereby the remote control system enables different setting operators to perform setting operations independently and efficiently by displaying whether the settings to be performed by the different setting operators have been completed.

[0052]

Further, the setting operators are allowed to easily perform an operation and at the same time to easily confirm setting statuses by causing the initial startup status display means to display setting information representing that the apparatus is in an unset state at the time when the power is turned on.

[0053]

These arrangements are applicable to a system requiring a connection work by a professional worker, such as a photovoltaic power system and a fuel cell system using a gas or a large amount of power. Also, the invention is applicable to a network-connectable remote control system.

[Brief Description of the Drawings]

[0054]

FIG. 1 is a block diagram showing an arrangement of a remote control system in the first embodiment of the invention;

FIG. 2 is a diagram showing a setting screen of the remote control system in the first embodiment of the invention;

FIG. 3 is a flowchart showing a setting operation to be executed by the remote control system in the first embodiment of the invention;

FIG. 4 is a diagram showing a setting screen operation of the remote control system in the first embodiment of the invention;

FIG. 5 is a block diagram showing an arrangement of a remote control system in the second embodiment of the invention;

FIG. 6 is a flowchart showing an initial startup status setting screen operation of the remote control system in the second embodiment of the invention;

FIG. 7 is a diagram showing an initial startup status setting screen operation of the remote control system in the second embodiment of the invention; and

FIG. 8 is a block diagram showing an arrangement of a remote control system as a conventional example.

[Description on Reference Signs]

[0055]

101, 801: apparatus

102, 802: water heater

103, 803: remote controller

104, 804: server

105: remote controller communicating means

106: server communicating means

107: apparatus inter-apparatus communicating means

108: water heater inter-apparatus communicating means

109: remote controller inter-apparatus communicating means

110: apparatus setting means

111: network setting means

112: setting status information transmitting means

113: remote controller controlling means

114: display means

115: setting status monitoring means

116: setting status display means

201: display setting button

202: test run button

203: line connection button

204: server connection button

205: end button

401: automatic registration display

501: initial startup status display means

701: display setting button

702: test run button

703: line connection button

704: server connection button

705: end button

706: setting completion mark

805: telephone line network

[Kind of Document] Abstract

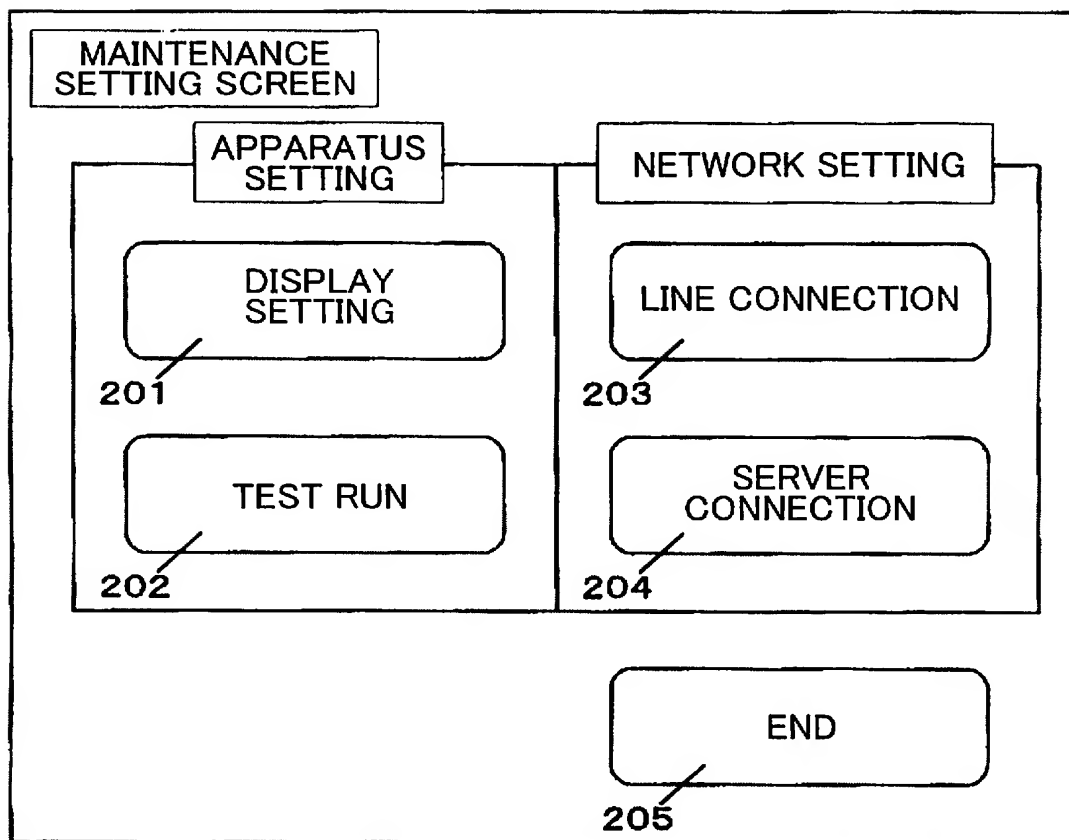
[Summary]

[Problem] Conventionally, only the completion of network installation/setting is notified to the server. There is no way to confirm whether installation/setting of a water heater has been completed. In a worst case, uninstallation/unsetting of a water heater may be overlook.

[Solving Means] A remote control system has a function of displaying a current setting by a setting status display means 116 based on information acquired by a setting status monitoring means 115, so that different operators are allowed to perform setting operations independently and efficiently by displaying whether the settings to be performed by the operators have been completed.

[Selected Drawing] FIG. 1

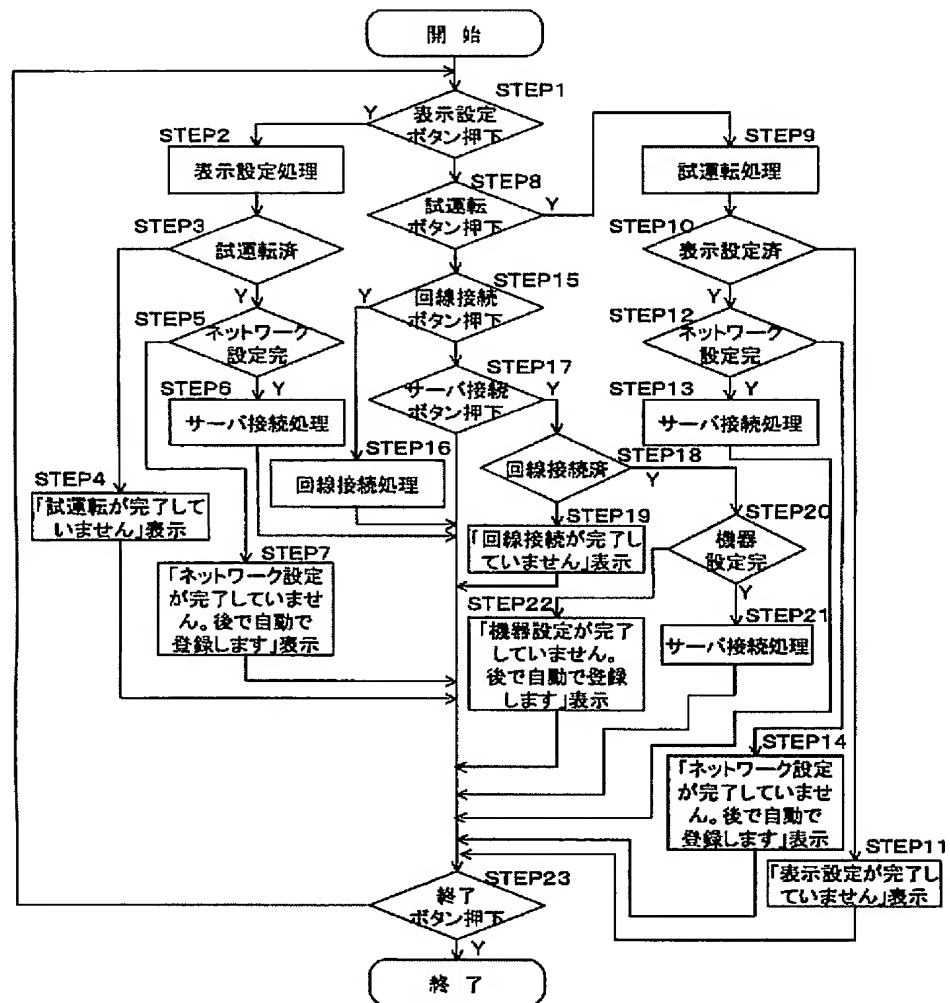
FIG.2



201 表示設定ボタン
202 試運転ボタン
203 回線接続ボタン
204 サーバ接続ボタン
205 終了ボタン

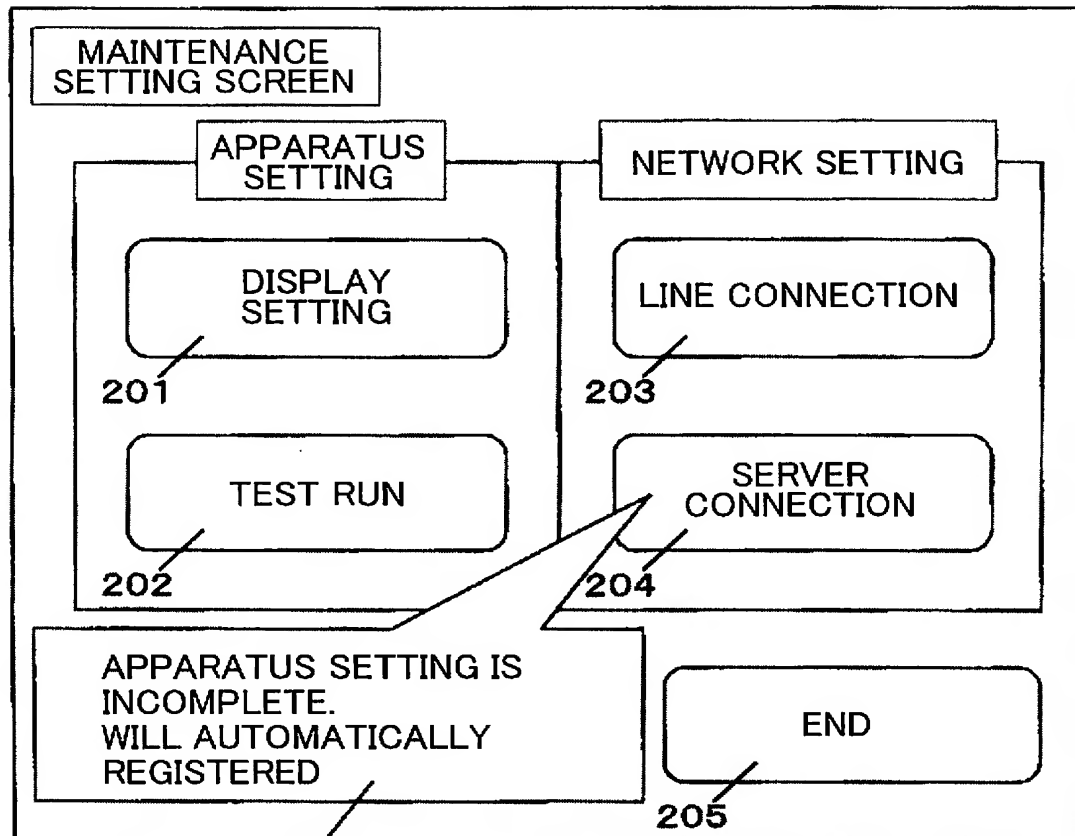
201 DISPLAY SETTING BUTTON
202 TEST RUN BUTTON
203 LINE CONNECTION BUTTON
204 SERVER CONNECTION BUTTON
205 END BUTTON

FIG.3



START
 STEP1 DISPLAY SETTING BUTTON DEPRESSED?
 STEP2 DISPLAY SETTING PROCESSING
 STEP3 TEST RUN DONE?
 STEP4 DISPLAY MESSAGE "TEST RUN INCOMPLETE"
 STEP5 NETWORK SETTING DONE?
 STEP6 SERVER CONNECTION PROCESSING
 STEP7 DISPLAY MESSAGE "NETWORK SETTING INCOMPLETE, WILL AUTOMATICALLY REGISTERED"
 STEP8 TEST RUN BUTTON DEPRESSED?
 STEP9 TEST RUN PROCESSING
 STEP10 DISPLAY SETTING DONE?
 STEP11 DISPLAY MESSAGE "DISPLAY SETTING INCOMPLETE"
 STEP12 NETWORK SETTING DONE?
 STEP13 SERVER CONNECTION PROCESSING
 STEP14 DISPLAY MESSAGE "NETWORK SETTING INCOMPLETE, WILL AUTOMATICALLY REGISTERED"
 STEP15 LINE CONNECTION BUTTON DEPRESSED?
 STEP16 LINE CONNECTION PROCESSING
 STEP17 SERVER CONNECTION BUTTON DEPRESSED?
 STEP18 LINE CONNECTED?
 STEP19 DISPLAY MESSAGE "LINE CONNECTION INCOMPLETE"
 STEP20 APPARATUS SETTING DONE?
 STEP21 SERVER CONNECTION PROCESSING
 STEP22 DISPLAY MESSAGE "APPARATUS SETTING INCOMPLETE, WILL AUTOMATICALLY REGISTERED"
 STEP23 END BUTTON DEPRESSED?
 END

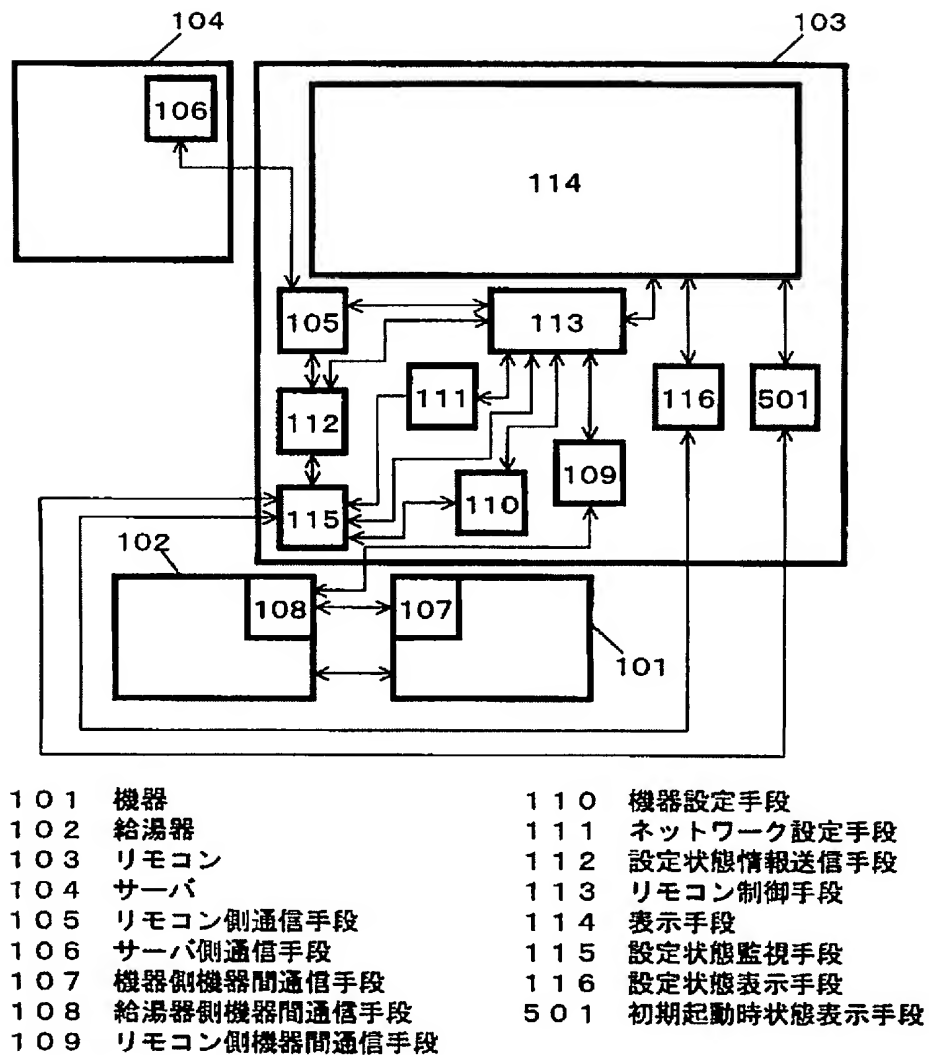
FIG.4



- 401
- 201 表示設定ボタン
 - 202 試運転ボタン
 - 203 回線接続ボタン
 - 204 サーバ接続ボタン
 - 205 終了ボタン
 - 401 自動登録表示

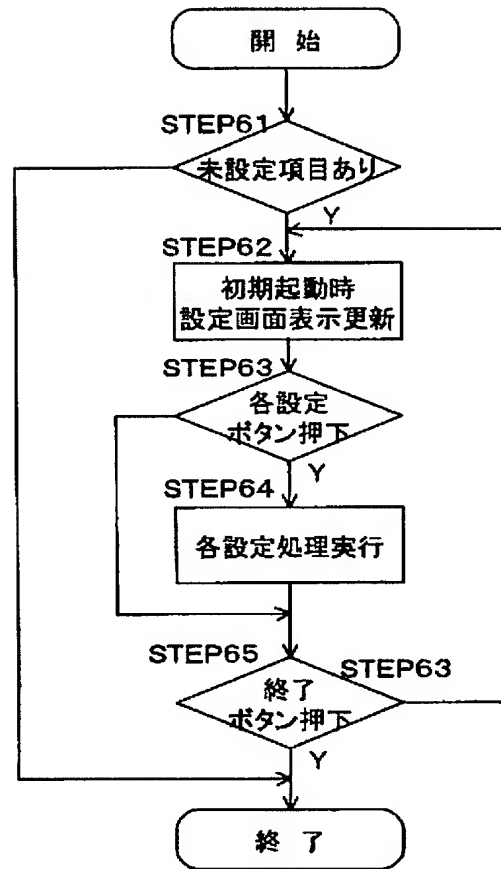
- 201 DISPLAY SETTING BUTTON
- 202 TEST RUN BUTTON
- 203 LINE CONNECTION BUTTON
- 204 SERVER CONNECTION BUTTON
- 205 END BUTTON
- 401 AUTOMATIC REGISTRATION DISPLAY

FIG.5



101 APPARATUS
 102 WATER HEATER
 103 REMOTE CONTROLLER
 104 SERVER
 105 REMOTE CONTROLLER COMMUNICATING MEANS
 106 SERVER COMMUNICATING MEANS
 107 APPARATUS INTER-APPARATUS COMMUNICATING MEANS
 108 WATER HEATER INTER-APPARATUS COMMUNICATING MEANS
 109 REMOTE CONTROLLER INTER-APPARATUS COMMUNICATING MEANS
 110 APPARATUS SETTING MEANS
 111 NETWORK SETTING MEANS
 112 SETTING STATUS INFORMATION TRANSMITTING MEANS
 113 REMOTE CONTROLLER CONTROLLING MEANS
 114 DISPLAY MEANS
 115 SETTING STATUS MONITORING MEANS
 116 SETTING STATUS DISPLAY MEANS
 501 INITIAL STARTUP STATUS DISPLAY MEANS

FIG.6



START

STEP61 UNSET ITEM?

STEP62 UPDATE DISPLAY OF INITIAL STARTUP STATUS SETTING SCREEN

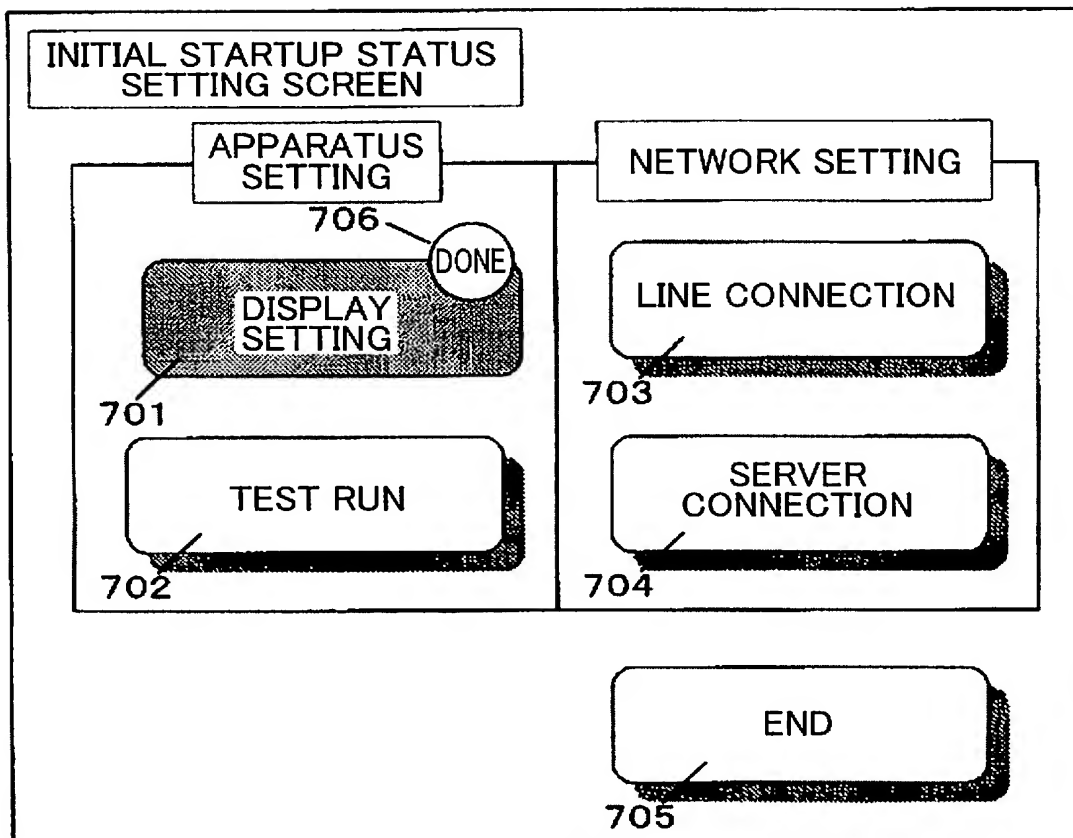
STEP63 EACH SETTING BUTTON DEPRESSED?

STEP64 EXECUTE EACH SETTING PROCESSING

STEP65 END BUTTON DEPRESSED?

END

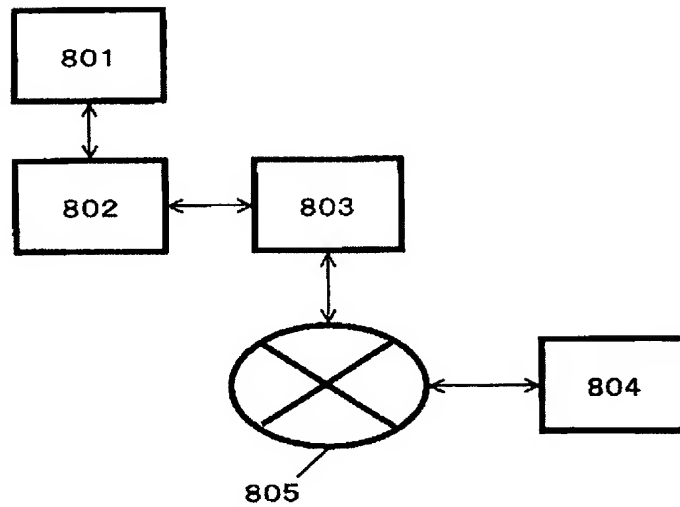
FIG.7



- 701 表示設定ボタン
- 702 試運転ボタン
- 703 回線接続ボタン
- 704 サーバ接続ボタン
- 705 終了ボタン
- 706 設定済み表示

701 DISPLAY SETTING BUTTON
702 TEST RUN BUTTON
703 LINE CONNECTION BUTTON
704 SERVER CONNECTION BUTTON
705 END BUTTON
706 SETTING COMPLETION DISPLAY

FIG.8



801	機器
802	給湯器
803	リモコン
804	サーバ
805	電話回線網

801 APPARATUS
802 WATER HEATER
803 REMOTE CONTROLLER
804 SERVER
805 TELEPHONE LINE NETWORK